



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/741,631	12/18/2000	Christopher Patrick	QCPA990347	5613

23696 7590 04/25/2007  
QUALCOMM INCORPORATED  
5775 MOREHOUSE DR.  
SAN DIEGO, CA 92121

EXAMINER
----------

WANG, TED M

ART UNIT	PAPER NUMBER
----------	--------------

2611

SHORTENED STATUTORY PERIOD OF RESPONSE	NOTIFICATION DATE	DELIVERY MODE
3 MONTHS	04/25/2007	ELECTRONIC

**Please find below and/or attached an Office communication concerning this application or proceeding.**

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Notice of this Office communication was sent electronically on the above-indicated "Notification Date" and has a shortened statutory period for reply of 3 MONTHS from 04/25/2007.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

us-docketing@qualcomm.com  
kscanla@qualcomm.com  
nanm@qualcomm.com

## Office Action Summary

Application No.

09/741,631

Applicant(s)

PATRICK, CHRISTOPHER

Examiner

Ted M. Wang

Art Unit

2611

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 18 January 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1,3-7,10,15,17-21,23,24 and 26-33 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1,3-6,10,15,17-21,23,24 and 26-33 is/are rejected.
- 7) ☒ Claim(s) 7 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                       | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## DETAILED ACTION

### *Response to Arguments*

1. Applicant's arguments, filed on 1/18/2007, with respect to claims 1, 3-7, 10 and 26-33 have been considered but are moot in view of the new ground(s) of rejection.
2. Applicant's arguments, filed on 11/2/2004, with respect to the rejection(s) of claim(s) 15, 17-21, 23 and 24 under 35 USC 103(a) have been fully considered but they are not persuasive. The Examiner has thoroughly reviewed Applicants' arguments but firmly believes that the cited reference to reasonably and properly meet the claimed limitations.

#### Independent Claims 15 and 24

- (1) *Applicants' argument* – "Applicant has amended the claims to make the inventive concept more clear, and respectfully traverses this ground of rejection as to the amended claims. Particularly, applicant contends that Harrison, either alone or in combination with Gronemeyer, fails to teach or suggest every claim limitation. The amendments to the claims clarify that the time difference is transmitted to the **mobile station**, and also clarify use of the time difference to **reduce code phase search space in the mobile station.**" as recited.

#### *Examiner's response* –

First, Applicant does not amend claims 15 and 24 as recited in the above paragraph nor argue the rejection under 35 USC 103(a) as being unpatentable over Harrison et al. in view of Gronemeyer.

Second, the Applicant amended the claim language to replace "GPS" to --- reference ---, "received signal" to --- position signal ---, and "at least one pair" to -- at least a first and a second ---. Harrison teaches a Global Position System (GPS) based tracking transceiver comprising a Global Position System (GPS) receiver and transmitter (column 6 lines 1-41). It receives signals from the GPS satellites (Fig.1 element 12) and it is inherent that the received signals are the position signals related to each GPS satellites. Furthermore, in Gronemeyer's reference, it clearly teaches that the time  $\Delta T$  is the time difference related to the code phase difference with respect to the first code phase CP1 and second code phase CP2 (column 9 lines 39-64).

Thus, for the explanation addressed in the above paragraph, the Examiner's position remains unchanged and the rejection under 35 U.S.C. 103(a) with Harrison's reference in view of Gronemeyer's reference is adequate.

### ***Claim Objections***

3. Claim 30 are objected to because of the following informalities:
  - With regard to the amended claim, filed on 1/18/2007, page 6, line 14, change "28. (New)" to --- 30. (New) ---.

Appropriate correction is required.

***Claim Rejections - 35 USC § 103***

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 1, 3-7, 10, 28 and 29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Camp, Jr. et al. (US 6,070,078) in view of Gronemeyer (US 6,304,216).

- With regard claim 1, Camp, Jr. et al., cited by the applicant, discloses a method for improving the acquisition time of positioning signals received by a mobile station (Fig.1 element 140), comprising:

receiving a plurality of positioning signals (column 3 lines 50-63) in a reference receiver (Fig.1 element 180) remote from the mobile station (Fig.1 element 140), including determining a code phase of the plurality of received positioning signals (column 4 lines 9-14, where the code phase (code shift position) is included in the auxiliary information);

transmitting the auxiliary information to the mobile station (column 4 lines 3-9);

receiving a first and second positioning signals at the mobile station (Fig.1 element 150 and column 4 lines 46-62), including reducing the search space for

the code phase of the second positioning signal based at least in part on said time difference (column 6 lines 12-45).

Camp, Jr. et al. discloses all of the subject matter as described in the above paragraph except for specifically teaching determining a time difference between the code phases of at least pair a first and a second positioning signal among the plurality of received positioning signals.

However, Gronemeyer teaches a time difference between the code phases of at least a first and a second position among the plurality of position signals (Fig.7 element CP1 162, CP2 174 and column 8 line 62 –column 9 line 64, especially, column 9 lines 39-64) in order to improve the signal to noise ration so that the range of the satellite is accurately determined (column 5 lines 44-59).

Therefore, It would have been obvious to one of ordinary skill in the art at the time of the invention was made to include the method as taught by Gronemeyer in which determine a time difference between the code phases of at least a first and a second position among the plurality of position signals, into Camp's receiver 100 so as to improve the signal to noise ration so that the range of the satellite is accurately determined.

- With regard claims 3 and 5, Camp, Jr. et al. further discloses wherein each among the plurality of received signals has a corresponding periodic code (column 3 lines 50-63) and wherein each among the code phases relates to a predetermined position within the corresponding periodic code (column 4 lines 9-14, where the code phase (code shift position).

It is well known in the art that each GPS satellite transmits a signal modulated with a unique pseudo-noise (PN) code. Each PN code comprises a sequence of 1023 chips which are repeated every millisecond consistent with a chip rate of 1.023 MHz. It is inherent that each among the plurality of received signals has a corresponding periodic code.

- With regard claim 4, the modified Camp, Jr. et al. and Gronemeyer's GPS receiver 180 further discloses wherein each among the plurality of received signals is based at least in part on a corresponding direct-sequence spread spectrum modulated signal (column 19 lines 6-9, Gronemeyer's reference).
- With regard claim 6, Camp, Jr. et al. further discloses receiving a composite signal, wherein each among the plurality of received signals is based at least in part on at least a portion of the composite signal (column 3 lines 50-63, where since the GPS receiver at base station 100 receives all GPS signals, it is inherent that the received signals are composite signal).
- With regarding claim 28, Harrison et al. further discloses wherein the plurality positioning signals are transmitted from a space vehicles (Fig.1 elements 160, where the space vehicles are GPS satellites).
- With regarding claim 29, Harrison et al. further discloses wherein the field receiver and the reference receiver are unsynchronized in time (Since both GPS receivers 180 and 150 at base station 100 and cellular phone 200, respectively, are receiving the position signals from GPS satellites with different doppler shift.

It is inherent that the field receiver and the reference receiver will not be synchronized in time).

6. Claims 15, 17-21, 23, 24, 26, 27 and 30-33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Harrison et al. (US 5,752,218) in view of Gronemeyer (US 6,304,216).

- With regard claims 15, 21 and 23, which is an apparatus claim related to claim 1, as shown in figures 1-6, Harrison et al. discloses an apparatus further comprising:

- a reference receiver (Figure 1 element 2) configured to receive a plurality of position signals (column 6 lines 33-41);

- a correlator (for example, Fig.1 element 8) configured to determine a code phase for each among the plurality of position signals (column 6, lines 3-58, and column 6, line 47-column 8, line 58); and

- transmitting a propagation time difference of received signals (column 7, lines 16-30, column 8, line 24-column 10, line 34 and abstract).

Harrison et al. discloses all of the subject matter as described in the above paragraph except for specifically teaching a time difference between the code phases of at least a first and a second position among the plurality of position signals.

However, Gronemeyer teaches a time difference between the code phases of at least a first and a second position among the plurality of position signals (Fig.7 element CP1 162, CP2 174 and column 8 line 62 –column 9 line

64, especially, column 9 lines 39-64) in order to improve the signal to noise ration so that the range of the satellite is accurately determined (column 5 lines 44-59).

Therefore, It would have been obvious to one of ordinary skill in the art at the time of the invention was made to include the method as taught by Gronemeyer in which determine a time difference between the code phases of at least a first and a second position among the plurality of position signals, into Harrison's processor 8 so as to improve the signal to noise ration so that the range of the satellite is accurately determined.

- With regarding claim 17, Harrison et al. further discloses wherein each among the plurality of position signals has a corresponding periodic code (Gold code, column 6, line 51-67), and

wherein each among the code phases relates to a predetermined position within the corresponding periodic code (column 6, line 51-58).

- With regarding claims 18 and 19, Harrison et al. further discloses wherein each among the plurality of position signals is based at least in part on a corresponding direct-sequence spread spectrum modulated signal (column 6, lines 3-13).

- With regard claim 20, Harrison et al. further discloses

wherein the determining a code phase of each among a plurality of received signals comprises calculating a correlation, for each among the plurality of received signals, between a corresponding code sequence and a signal based at least in part on the composite signal (column 6, lines 3-58, and column 6, line

47-column 8, line 58),

wherein each among the plurality of received signals has a corresponding periodic code (Gold code, column 6, line 51-67), and

wherein each among the code phases relates to a corresponding predetermined position within the corresponding periodic code, and

wherein the code sequence relates at least in part to the corresponding periodic code (Gold code, column 6, line 51-67).

□ With regard claim 24, Harrison et al. further discloses

a reference receiver (Fig.1 and 1B element 16 and column 6 lines 14-22 and 42-46) configured to receive position signals from a plurality of space vehicles (Fig.1 element 12 and column 6 lines 23-32) and transmit information (column 6 lines 38-41); and

a field receiver (Fig.1 and 1A element 14 and column 6 lines 14-22 and 33-40) configured to receive the position signals from a plurality of space vehicles (Fig.1 element 12 and column 6 lines 23-32) and to receive the information,

wherein the reference receiver determines a reference code phase for each among at least a first and a second one of the position signals (equation 8 and column 10 lines 49-67), and

wherein the field receiver determines a field code phase for the first one of the position signals (equation 8 and column 10 lines 42-48, where the first code phase is represented by  $\mu_1$ ), and

wherein the field receiver determines a field code phase for the second

one of the position signals at least in part from the information (equation 8 and column 10 lines 42-48, where the second code phase is represented by  $\mu_2$ ).

Harrison et al. discloses all of the subject matter as described in the above paragraph except for specifically teaching a time difference between the code phases of at least a first and a second position among the plurality of position signals.

However, Gronemeyer teaches a time difference between the code phases of at least a first and a second position among the plurality of position signals (Fig.7 element CP1 162, CP2 174 and column 8 line 62 –column 9 line 64, especially, column 9 lines 39-64) in order to improve the signal to noise ration so that the range of the satellite is accurately determined (column 5 lines 44-59).

Therefore, It would have been obvious to one of ordinary skill in the art at the time of the invention was made to include the method as taught by Gronemeyer in which determine a time difference between the code phases of at least a first and a second position among the plurality of position signals, into Harrison's processor 8 so as to improve the signal to noise ration so that the range of the satellite is accurately determined.

- With regarding claim 26, Harrison et al. further discloses wherein the positioning signals transmitted from the space vehicles comprise one of GPS and GLONASS signals (column 6, lines 14-15, where the space vehicles are GPS satellites).
- With regarding claim 27, Harrison et al. further discloses wherein the field receiver and the reference receiver are unsynchronized in time (column 10, lines

35-67, where both GPS receivers 2 and 7 at tracking unit 14 and central station 16, respectively, are receiving the position signals from GPS satellites with different doppler shift. It is inherent that the field receiver and the reference receiver will not be synchronized in time).

- With regarding claim 30, Harrison et al. further discloses wherein the plurality positioning signals are transmitted from a space vehicles (column 6, lines 14-15, where the space vehicles are GPS satellites).
- With regarding claim 31, Harrison et al. further discloses wherein the field receiver and the reference receiver are unsynchronized in time (column 10, lines 35-67, where both GPS receivers 2 and 7 at tracking unit 14 and central station 16, respectively, are receiving the position signals from GPS satellites with different doppler shift. It is inherent that the field receiver and the reference receiver will not be synchronized in time).
- With regarding claim 32, Harrison et al. further discloses wherein the plurality positioning signals are transmitted from a space vehicles (column 6, lines 14-15, where the space vehicles are GPS satellites).
- With regarding claim 33, Harrison et al. further discloses wherein the field receiver and the reference receiver are unsynchronized in time (column 10, lines 35-67, where both GPS receivers 2 and 7 at tracking unit 14 and central station 16, respectively, are receiving the position signals from GPS satellites with different doppler shift. It is inherent that the field receiver and the reference receiver will not be synchronized in time).

***Allowable Subject Matter***

7. Claim 7 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

***Conclusion***

8. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

9. A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ted M. Wang whose telephone number is 571-272-3053. The examiner can normally be reached on M-F, 7:30 AM to 5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chieh Fan can be reached on 571-272-3042. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Ted M Wang  
Examiner  
Art Unit 2611

Ted M. Wang *TW*

*Chieh M. Fan*  
CHIEH M. FAN  
SUPERVISORY PATENT EXAMINER